General Response Action	Remedial Technology	Process Options	Effectiveness	Implementability	Cost	Screening Decision	Representative Technology
No Action	None	Not Applicable	Does not achieve RAOs.		None	Retained per NCP.	NA
Institutional Controls	Physical Restrictions	Fish Consumption Advisories & Bans	Limited to contaminants that accumulate in fish or shellfish. Mainly for commercial fisheries, not very effective for recreational fisheries. Better for controlling human exposures than ecological exposures. More effective if used in conjuction with more active technologies.	Requires commitment and cooperation of impmenting party to administer and acceptance of Native American tribes and public.	Low	Retained for consideration in all areas.	
	Engineering Restrictions	Land Use/Access Restrictions	Better for controlling human exposures than ecological exposures. More effective if used in conjuction with more active technologies.	Requires commitment and cooperation of impmenting party to administer and acceptance of Native American tribes and public.	Low	Retained for consideration in all areas.	
		Structure Mainenance Agreements	Better for controlling human exposures than ecological exposures. More effective if used in conjuction with more active technologies.	Requires commitment and cooperation of impmenting party to administer and acceptance of Native American tribes and public.	Low	Retained for consideration in all areas.	
	Legislative Restrictions	Waterway Use Restrictions	Enforcement of restrictions in large waterway is difficult. Better for controlling human exposures than ecological exposures. More effective if used in conjuction with more active technologies.	Requires commitment and cooperation of impmenting party to administer and acceptance of Native American tribes and public. Dreding and navigation restrictions would be limited due to excessive navigational use of waterway.	Low	Retained for consideration in all areas.	
Monitored Natural Recovery	Physical Transport	Desorption, dispersion, diffusion, dilution, volatilation, resuspension, and transport.	Potentially effective.	Technically implementable.	Low	Retained for consideration in all areas.	
	Chemical and Biological Degradation	Dechlorination (aerobic and anaerobic), bioderadation	Limited to SVOCs and PAHs. Does not result in complete destruction of PCBs in acceptable time frame. Declorination is not directly related to toxicity reduction. Not applicable to metals.	Technically implementable.	Low	Retained for consideration in all areas.	
	Physical Burrial Process	Sedimentation	Works best in depositional areas and areas not subject to routine dredge maintaineince. Requires demonstration of long-term deposition and burrial.	Technically implementable.	Low	Retained for consideration in all areas.	
Enhanced Monitored Recovery	Enhanced Burrial/Dilution	Thin Layer Cap	Applicable at areas where MNR processes are demonstrated, but faster recovery is required, or as a residual management tool after completion of removal action	Technically implementable.	Low to Moderate	Retained for consideration in all areas.	
In-Place Containment	Capping	Conventional Sand Cap	Effective for low-solubility and highly sorbed contaminants (e.g., PCBs) where principle transport mechanism is resuspension/deposition. Not effective in potential scour areas from river currents or propeller wash. Not effective in controlling groundwater plumes.	Requires flood rise analysis and must consider water use, depth requirements, and slope stability.	Low	Retained for consideration in all areas.	
		Conventional Sand/Clay Cap	Effective for low-solubility and highly sorbed contaminants (e.g., PCBs) where principle transport mechanism is resuspension/deposition. Not effective in potential scour areas from river currents or propeller wash. Not effective in controlling groundwater plumes.	Requires flood rise analysis and must consider water use, depth requirements, and slope stability.	Low	Retained for consideration in all areas.	
		Armored Cap	Applicable at areas where increased velocities from river flow or potential scouring due to propeller wash might be expected. Not effective in controlling groundwater plumes.	Requires flood rise analysis and must consider water use. May require mitigation if not habitat friendly.	Low to Moderate	Retained for use in high-energy areas of site.	
		Composite Cap (e.g., HDPE, Geotextile)	Effective in reducing cap thickness, providing additional floor-support, providing bioturbation barrier, or areas where methane generation may be issue.	Requires flood rise analysis and must consider water use.	Low to Moderate	Retained for consideration in all areas.	
		Reactive Cap	Specific to chemical being managed; may not be effective where multiple types of contaminants (e.g., metals and organics) are co-located.	Requires flood rise analysis and must consider water use, depth requirements, and slope stability.	Low to Moderate	Retained for consideration in all areas as innovative technology.	
Removal	Dredging	Mechanical Dredge	Effective in removing stiffer or denser sediments, but requires greater effort to reduce resuspension rates and residual production. Residuals will require management strategies to achieve cleanup goals. More effective at handling debris. Environmental buckes suitable for softer materials with low debris; clamshell buckets suitable for harder, dense sediments.	Dredge depths are limited by the ladder and cable lengths. Application in shallow water depths limited by draft of supporting barge or ship. Requires barge to place material during operations.	Moderate	Retained for consideration in all areas.	
		Hydraulic Dredge	Effective in removing soft or loose sediments with high water content. Capable of lower resuspension rates at the point of dredging, as well as lower in-water residual production than mechanical dredging. Residuals will require management strategies to achieve cleanup goals.	The presence of large amounts of debris can adversely affect hydraulic dredging operations and may require pre-debris sweeps. Dredge depths are limited by the ladder and cable lengths. Application in shallow water depths limited by draft of supporting barge or ship. Requires close proximity to land-based dewatering facility, barge dewatering facility, or CDF due to pumping limitations. Slurry separation and disposal rates can be slower than dredging rates and may limit the rate of dredging.	Moderate	Retained for consideration in all areas.	
	Dry Excavation	Excavator	Effective where water depths limit conventional dredging equipment.	Requires installation of sheet pile walls or cofferdam, unless performed in exposed areas during low river stages. Limited application to areas that can be reached from shore or by specialty equipment designed to work on soft unconsolidated sediments. Equipment is locally commercially available.	Low to Moderate	Retained for consideration in nearshore areas.	
Confinement	Commercial Landfill	Hillsboro Northern Wasco County Roosevelt Regional Columbia Ridge (Subtitle D)	Adequate capacity. Adequate capacity. Adequate capacity. Adequate capacity.	Requires overland transportation. Accepts wet waste. Rail transportaion available. Accepts wet waste. Rail transportaion available.		Retained for consideration. Retained for consideration. Retained for consideration. Retained for consideration.	
		Chem Waste (Subtitle C)	Adequate capacity.			Retained for consideration for highly contaiminated waste.	
	Upland Landfill	No likely candidate property.		Floodplain location makes upland disposal more difficult.		Removed from further consideration.	
	CAD	Willamette River (RM 4/5)	Need for seasonal capping reduces available capacity. Capacity limited.	Potential for increased releases during disposal. New sites would require flood rise analysis. Mitigation would be required. Would require long-term monitoring and maintenance. Would require navigation restrictions.		Retained for consideration.	
		Willamette River (RM 9)	Need for seasonal capping reduces available capacity. Capacity limited.	Potential for increased releases during disposal. New sites would require flood rise analysis. Mitigation would be required. Would require long-term monitoring and maintenance. Would require navigation restrictions.		Retained for consideration.	
		Swan Island Lagoon	Need for seasonal capping reduces available capacity. Capacity limited.	Potential for increased releases during disposal. New sites would require flood rise analysis. Mitigation would be required. Would require long-term monitoring and maintenance. Would require navigation restrictions.		Retained for consideration for AOPC 17.	
		Columbia River (RM 102.5)		Potential for increased releases during disposal.		Retained for consideration.	
		Ross Island	May be incompatible with RA schedule. Limited capacity available.	Potential for increased releases during disposal.		Retained for consideration.	
	CDF	Terminal 4 Slip 1	60% design complete.	New sites would require flood rise analysis and mitigation. Would require long-term monitoring and maintenance.		Retained for consideration.	
		Swan Island Lagoon	Large capacity.	New sites would require flood rise analysis and mitigation.		Retained for consideration.	
		Arkema	Limited capacity.	New sites would require flood rise analysis and mitigation.		Retained for consideration for AOPC 14.	
In-Situ Treatment	Biological	Slurry Biodegradation	Limited to orgainc compounds. Biodegradation has not been demonstrated to effectively remediate metals, PCBs, or TBT within reasonable time frames.	Requires installation of sheet piling around entire area.		Removed from further consideration.	
		Aerobic Biodegradation	Biodegradation has not been demonstrated to effectively remediate metals, PCBs, or TBT within reasonable time frames.			Removed from further consideration.	
		Anaerobic Biodegradation	Biodegradation has not been demonstrated to effectively remediate metals, PCBs, or TBT within reasonable time frames.			Removed from further consideration.	
		Imbiber Beads	Potentially applicable to PCBs and SVOCs, not metals. No data on effectiveness with TBT.	Not demonstrated for remediation of sediments. Removal and disposal of the blanket is not demonstrated.		Removed from further consideration.	
	Chemical	Slurry Oxidation	Not effectively demonstrated in full-scale application.	Requires in-water steel piling around treatement area and extensive water quality monitoring outside piles.		Removed from further consideration.	
		Aqua MecTool Oxidation	Technology is effective for PCBs, SVOCs in soils. Process should be effective for TBT, but not metals.	Requires treating sediments in place using of 18' x 18' caisson and proprietary injectors. Not demonstrated in pilot- or full-scale sediment projects. Technical difficultites in field trials injecting high air flows into caisson with standing water while preventing generation of TSS.		Removed from further consideration.	
	Physical-Extractive Processes	Oxidation	Effectiveness has not been demonstrated for sediments.	Requires use of injection wells.		Removed from further consideration.	
		Sediment Flushing	Bench scale effective. No known pilot or full-scale applications.	Extraction solution must be treated. Requires in-water steel piling around tratement area and extensive water quality monitoring outside piles.		Removed from further consideration.	

	Physical - Immobilization	Aqua MecTool Stabilization	Proprietary technology that has been effective in stabilizing metals, PCBs and SVOCs in soil. No data available on TBT, but physical process likely to be effective on butyltins.	Requires treating sediments in place using of 18' x 18' caisson and proprietary injectors. Implementation problems with coal-tar contaminated sediments. Previous trials with this technology created water treatement problems inside the caisson.		Removed from further consideration.
		Electochemcial Oxidation	Limited to Mercury and PAHs. No demonstrated sediment application.	Requires installation of sheet piling around entire area.		Removed from further consideration.
		Vitrification	Effective stabilizing contaminants in soil applications, but requires less than 60% water content.	Remaining sediment surface may not provide suitable habitat.		Removed from further consideration.
		Granulated Activated Carborn (GAC)	Limited to organic compounds and some metals.	Works best with lower levels of contaminants.	Low	Retained for consideration in areas with lower level of PCBs/metals.
		Ground Freezing	Long-term effectiveness in presence of standing water has not been demonstrated. Standing water likely provides a significant sink for cold temperatures and would substantially increase cost.	Requires installation of pipe array. Recommended only for short-duration applications and to assist with excavation.		Removed from further consideration.
Ex-Situ Treatment	Biological	Landfarming/Composting	Limited to TPH and PAHs.	Large staging areas are required within close proximity to the project. BMPs may be necessary to ensure air quality impacts are minimized. If air quality impacts are expected, a contained biological PO may be more appropriate. BMPs are also necessary to control contaminant migration from runoff. Bench-scale testing would be required during design. Requires dewatering of dredged material.	Low to Moderate	Retained for consideration.
		Biopiles	Limited to VOCs, SVOCs, and TPH. Not effective for metals, PCBs, TBT, or dioxins. The presence of site COCs such as PCBs, organochlorine pesticides and metals may prevent these technologies from achieving the desired cleanup levels.	Large treatment areas are required. Regular equipment maintenance is required. BMPs are necessary to ensure air quality impacts are minimized. Bench-scale testing would be required during design. Requires dewatering of dredged material.	Low to Moderate	Removed from further consideration.
		Fungal Biodegradation	Not effective for metals, PCBs, TBT, or dioxins. High concentrations of contaminants may inhibit growth.	Technology has only been demonstrated at bench-scale; no known full-scale applications.		Removed from further consideration.
		Slurry-phase Treatment	Limited to VOCs and SVOCs.	Regular equipment maintenance is required. BMPs are necessary to ensure air quality impacts are minimized. Moisture control is necessary to ensure consistent slurry concentrations are treated. Process water requires treatment and disposal. Bench-scale testing would be required during design.	Moderate	Removed from further consideration.
		Enhanced Biodegradation	Not effective for metals, PCBs, TBT, or dioxins. PAHs and some SVOCs are amenable to aerobic degradation.			Removed from further consideration.
	Chemical	Acid Extration	Suitable for sediments contaminated with metals, but not applicable to PCBs or SVOCs. No data on TBT.			Removed from further consideration.
		Solvent Extraction	Moderate to high. Successfully pilot-demonstrated at New Bedford Harbor which is contaminated with PCBs. Where metals and organics are both present in the sediment, which is typical, chemical extraction targeting organics would likely need to be coupled with other operations addressing removal/stabilization of metals. This demonstration has limited applicability to the Portland Harbor project as the goal of the pilot program was to reduce PCB concentrations to below 50 mg/kg to reduce the waste code from Subtitle C to Subtitle D; therefore, there are limited data available to determine the effectiveness of the pilot in treating to lower concentrations.	Regular equipment maintenance is required. BMPs are necessary to ensure air quality impacts are minimized. Process water and residual wastes require treatment and disposal, which could significantly increase the overall cost of treatment. Bench-scale testing would be required during design.	High	Retained for consideration for sediments contaning PCBs greater than 50 ppm.
	Chemical/Physical	Slurry Oxidation	Applicable to SVOCs, but not PCBs or metals. TBT treatment unknown. High organic carbon content in sediment will increase volume of reagent and cost.	Large volume of tankage required. No known full-scale applications.		Removed from further consideration.
		Reduction/Oxidation	Target contaminant group is inorganics. Less effective for nonhalogenated VOCs, SVOCs, fuel hydrocarbons, and pesticides. Not cost effective for high contaminant concentrations due to large amounts of oxidizing agent required.	Regular equipment maintenance is required. BMPs are necessary to ensure air quality impacts are minimized. Process water and residual wastes require treatment and disposal, which could significantly increase the overall cost of treatment. Bench-scale testing would be required during design.	High	Removed from further consideration.
		Dehalogenation	Limited to chlorinated organics (PCBs and dioxins). Technology not applicable to metals.	Regular equipment maintenance is required. Generates secondary waste streams of air, water, and slucge. BMPs are necessary to ensure air quality impacts are minimized. Process water and residual wastes require treatment and disposal, which could significantly increase the overall cost of treatment. Bench-scale testing would be required during design.	High	Removed from further consideration.
		Sediment Washing	Pilot-scale testing showed demonstrated effectiveness for metals, SVOCs and PCBs in sediments. Limited data suggests not effective for TBT. High recalcitrant (e.g., PCBs) contaminant concentrations, increased precentage fines, and high organic content increases overall treatment costs.	Regular equipment maintenance is required. BMPs are necessary to ensure air quality impacts are minimized. Process water and residual wastes require treatment and disposal, which could significantly increase the overall cost of treatment. Bench-scale testing would be required during design. Ffor some dewatering methods, process residence time is limited to the time required for the slurry to be pumped/flow through the various unit operations. Recycle may be required to achieve sufficient contaminant reduction in some cases, however, which would incrementally increase residence times.	Moderate	Retained for consideration in all areas with high volumes of removed sediments containing organic contaminants and coarse grain material.
		Radiolytic Dechlorination	Only bench-scale testing has been performed.	Process must be carried out under inert atmosphere. Difficult and expensive to create inert atmosphere for full-scale project.	Very High	Removed from further consideration.
	Physical	Dewatering - In-barge	Moderate to high. Degree of debris removal required varies depending upon the requirements of the dewatering equipment and any follow-on treatment processes.	BMPs are necessary to ensure water quality impacts are minimized. Compatable with either mechanical or hydraulic dredging.	Low to Moderate	Retained for consideration in all areas.
		Dewatering - Lagoon	Highly effective, but dependent on climate conditions.	Large staging areas are required within close proximity to the project. Dewatering could take several months depending on the percentage of fine sediment present and amount of precipitation occurring. Compatable with hydraulic dredging.	Low	Retained for consideration in all areas.
		Dewatering - Geotextile Tube	Moderately to highly effective. Degree of debris removal required varies depending upon the requirements of the dewatering equipment and any follow-on treatment processes.	Moderate to large staging areas are required within close proximity (~3-5 miles) to the project. Dewatering could take several months depending on the percentage of fine sediment present. Geotextile tubes may work for fine-grained sediments with proper coagulant treatment. In addition, bench scale testing is required to identify appropriate flocculants and dosages. BMPs may be necessary to ensure air quality impacts are minimized. Compatable with hydraulic dredging. Mechanical dredging would require slurrying.	Low to Moderate	Retained for consideration in all areas.
		Dewatering - Mechanical	Highly effective. Degree of debris removal required varies depending upon the requirements of the dewatering equipment and any follow-on treatment processes.	Regular equipment maintenance is required. BMPs may be necessary to ensure air quality impacts are minimized. Compatable with hydraulic or mechanical dredging. Belt filter press circuits are continuous flow processes. Residence time is a matter of minutes. Plate and frame presses are batch processes, usually operated in parallel to achieve continuous operation. Residence time may be longer than for belt filter presses, but probably on the order of minutes to hours. In addition, mechanical dewatering typically requires a slurry feed from a hydraulic dredging operation. Bench scale testing would be needed to determine operational parameters and requirements.	Low	Retained for consideration in all areas.
		Dewatering - Reagent	Moderately to highly effective. Degree of debris removal required varies depending upon the requirements of the dewatering equipment and any follow-on treatment processes.	BMPs may be necessary to ensure air quality impacts are minimized. Compatable with mechanical dredging. this operation is often performed on a barge negating the need for upland processing facilities.	Low	Retained for consideration in all areas.
		Separation	Effective in reducing volume of highly contaminated material with high sand content. Increases effectiveness of dewatering dredged material. Not effective with sediments containing high concentration material with high organic content. May not be effective with PCBs since they may be retained on sand particles as emulsions.	Readily implementable - mobil units available for quick setup and takedown time. Can be combined with soil washing to improve separation. Clean separated sand may be available for potential beneficial use (would require identification of reuse). Bench scale testing to characterize the different size or density fractions is typically needed to assess feasibility.	Moderate	Retained for consideration in all areas.

	Solar Detoxification	Limited to VOCs, SVOCs, solvents, pesticides and dyes. Not effective for PCBs, dioxins, or TBT. Some heavy metals may be removed. Only effective during daytime with normal intensity of sunlight.	Process has been successfully demonstrated at pilot scale.		Removed from further consideration.
	Solidification - Cement	Bench-scale studies have added immobilizing reagents ranging from Porland cement to lime cement, kiln dust, pozzolan, and proprietary reagents. Lime has been successfully added to dredged material at other projects.	BMPs are necessary to ensure air quality impacts are minimized. Dewatering prior to cement stabilization/solidification is dependent on logistics. Mechanically dredged sediments will be saturated, but since the volumes of water produced by mechanical dredging are much more limited, blending with stabilizing agents can be done in barges on wet materials. Where hydration of the blending agent is required, some water would actually be desirable. A similar operation could be performed on hydraulically dredged sediments after they have become sufficiently dewatered (passively) to permit handling, or after they were mechanically dewatered.	Low to Moderate	Retained for consideration in all areas.
	Solidification - Sorbent Clay	Moderate to high.	BMPs are necessary to ensure air quality impacts are minimized.	Moderate	Retained for consideration in all areas.
	Asphalt emulsion	Low to moderate	BMPs are necessary to ensure air quality impacts are minimized. Dewatering may be required.	Low to Moderate	Retained for consideration in all areas.
Thermal	Incineration	High temperatures result in generally complete deomposition of PCBs and other organic chemicals. Effective across wide range of sediment characteristics. Not effective for metals.	Requires air pollution control device. Mobile treatment may be used, if available, and may more cost effective than offsite thermal treatment if the treatment volumes are high enough. Nearest existing, permitted facility is greater than 500 miles from project. High energy consumption. Potential for dioxin generation is a concern. Public concern may make implementability challenging.	Very High	Retained for RCRA-listed waste prior to land disposal of treated residuals
	High Temperature Thermal Desorption	Target contaminants are SVOCs, PAHs, PCBs, TBT, and pesticides. Metals are not destroyed. Especially effective with high levels of PCBs (>50 ppm).	Requires air pollution control device. Technology readily available as mobile untis that would need to be set up at a fixed location in lose proximity to the contaminated sediments. High energy consumption; however, costs may be offset through the sale/use of generated power. Pre-permitting consultation and acceptance of BU products is crucial to economic viability of PO.	High	Retained for consideration for sediments contaning PCBs greater than 50 ppm.
	Low Temperature Thermal Desorption	Effective for SVOCs and PAHs. May have limited effectiveness for PCBs. Metals not destroyed. Effectiveness demonstrated at other sediment remediation sites.	Requires air pollution control device. Fine-grained sediment and high moisture content will increase retention times. Vaporized organic contaminants that are captured and condensed need to be destroyed by another technology. The resulting water stream from the condenstation process may require futher treatment. Widely-available commercial technology for both on-site and off-site applications.	Low	Retained for consideration in all areas.
	Pyrolysis	Limited to SVOCs and pesticides. Not effective in destroying or physically separating inorgainics from contaminated medium.	Requires air pollution control device (acid scrubber) to treat off-gas. Nearest existing, permitted facility is greater than 500 miles from project. Mobile treatment may be used, if available, and may more cost effective than offsite thermal treatment if the treatment volumes are high enough. High energy consumption. Potential for dioxin generation is a concern.	High to Very High	Removed from further consideration.
	Vitrification	Thermally treats PCBs, SVOCs, and TBT, and stabilizes metals. Successful bench-scale application to treating contamined sediments lin Lower Fox River and Passaic River.	Requires air pollution control device. High energy consumption; however, costs may be offset through the sale/use of generated power or alternative energy sources (e.g., recycled tires) are identified. Pre-permitting and acceptance of BU products is crucial to economic viability of PO. May be effective in stabilizing low concentration metals. Potential for dioxin generation is a concern. Sediments must be dried to a very low water content, thus dewatering and drying would be required for both mechanical and hydraulically dredged materials. Not commercially available or applied on similar site and scale.	Moderate to Very High - may be able to offset cost by reuse	Removed from further consideration.
	High Pressure Oxidation	Predominantly for aqueous-phase contaminants. Wet air oxidation is a commercially-proven technology for municipal wastewater sludges. Effectiveness for destruction of PCBs is poor.			Removed from further consideration.

	Alternatives for GRAs					Notes
1	No Action					
	Institutional Controls					ICs alone will not protect eco receptors.
	Monitored Natural Recovery					Since there is currently a fish advisory, unlikely that MNR without ICs
2	Monitored Natural Recovery	plus Institutional Controls				
	Enhanced Natural Recovery					Will need long-term monitoring to show effectiveness
	Enhanced Natural Recovery	plus Institutional Controls				
3	Enhanced Natural Recovery	plus Monitored Natural Recovery				
4	Enhanced Natural Recovery	plus Institutional Controls	plus Monitored Natural Recovery			
	Capping					Unlikely that capping without some future monitoring will occur. Will need long-term O&M monitoring for effectiveness.
	Capping	plus Institutional Controls				
	Capping	plus Monitored Natural Recovery				Based on waterway use, unlikely that capping will be allowed without some ICs.
	Capping	plus Enhanced Natural Recovery				
5	Capping	plus Institutional Controls	plus Monitored Natural Recovery			
	Capping	plus Institutional Controls	plus Enhanced Natural Recovery			
	Capping	plus Monitored Natural Recovery	plus Enhanced Natural Recovery			
6	Capping	plus Institutional Controls	plus Monitored Natural Recovery	plus Enhanced Natural Recovery		
	Dredging plus Confinement	plus Institutional Controls				Will need enhanced natural recovery to deal with residuals.
	Dredging plus Confinement	plus Monitored Natural Recovery				All dredging without treatment options will require some type of confinement
	Dredging plus Confinement	plus Enhanced Natural Recovery				Likely that some monitoring would be required to show RAOs met.
	Dredging plus Confinement	plus Capping				
	Dredging plus Confinement	plus Institutional Controls	plus Monitored Natural Recovery			
	Dredging plus Confinement	plus Institutional Controls	plus Enhanced Natural Recovery			
	Dredging plus Confinement	plus Institutional Controls	plus Capping			
7	Dredging plus Confinement	plus Monitored Natural Recovery	plus Enhanced Natural Recovery			
	Dredging plus Confinement	plus Monitored Natural Recovery	plus Capping			
8	Dredging plus Confinement	plus Institutional Controls	plus Monitored Natural Recovery	plus Enhanced Natural Recovery		
	Dredging plus Confinement	plus Institutional Controls	plus Monitored Natural Recovery	plus Capping		
	Dredging plus Confinement	plus Institutional Controls	plus Enhanced Natural Recovery	plus Capping		
9	Dredging plus Confinement	plus Institutional Controls	plus Monitored Natural Recovery	plus Enhanced Natural Recovery	plus Capping	
10	In-situ Treatment	plus Monitored Natural Recovery				GAC is only in-situ treatment option retained and is only viable with low-level PCB contamination. Would require monitoring to meet RAOs.
11	Dredging	plus Ex-situ Treatment	plus Confinement	plus Monitored Natural Recovery	plus Enhanced Natural Recovery	Containment required if treatment does not destroy all contaminants to acceptable levels.
12	Dredging	plus Ex-situ Treatment	plus Monitored Natural Recovery	plus Enhanced Natural Recovery		Option for no containment if treatment effectively destroys contaminants.

= screens out